

wherein the first substrate and the second substrate are formed with a first opening area and a second opening area for each pixel, and

wherein, one of the first substrate and the second substrate irradiated with incident light is formed with a microlens so as to oppose each pixel, and

the microlens refract incident light from the clear viewing direction toward the opening area, and a part of the incident light from opposite of the clear viewing direction toward the unopened area.

REMARKS

Claims 1-29 are pending. By this Amendment, claims 1, 16, 28 and 29 are amended.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

Applicants appreciate the courtesies extended to Applicants' representative by Examiner Akkapeddi during the January 16, 2003 personal interview.

Reconsideration based on the following remarks is respectfully requested.

I. The Claims Satisfy the Requirements of 35 U.S.C. § 112, Second Paragraph

Claims 1 and 16 are amended as suggested by Examiner Akkapeddi during the January 16 interview to obviate the rejection under 35 U.S.C. § 112, second paragraph of the September 25, 2002 Office Action. Withdrawal of the rejection under 35 U.S.C. § 112, second paragraph is respectfully requested.

II. The Claims Define Patentable Subject Matter

The September 25 Office Action rejects claims 1-20 under 35 U.S.C. §102(b) over Oh et al. (U. S. Patent No. 5,844,644); claims 21 under 35 U.S.C. §103(a) over Oh in view of Suzuki et al. (U.S. Patent No. 6,437,764); and claims 22-27 under 35 U.S.C. §103(a) over Oh in view of Hayashi et al. (U.S. Patent No. 6,193,376). These rejections are respectfully traversed.

Oh does not disclose or suggest a liquid crystal device including, *inter alia*, liquid crystal sandwiched between a first substrate and a second substrate, the liquid crystal having an alignment state that produces a clear viewing direction through the liquid crystal, the first substrate and the second substrate transmitting, of light incident from one of the substrates, light incident from the clear viewing direction in a larger amount than light incident from opposite of the clear viewing direction, as recited in claim 1, and as similarly recited in claims 28 and 29.

Instead, Oh discloses a liquid crystal display that has an overcoat layer formed over a second substrate. The overcoat layer of Oh is patterned to form microlenses that refract the incident light to pass through light transmissive portions of a first substrate without being blocked by light of untransmissive portions of the first substrate. The structure shown in Fig. 3 of Oh does not emit light incident from a clear viewing direction in a larger amount than light incident from opposite of the clear viewing direction, the clear viewing direction being determined by the alignment state of the liquid crystal, but instead, similar to the conventional liquid crystal device discussed at page 5, lines 18-21 of the specification, increases the amount of light incident from opposite the clear viewing direction. Thus, in contrast to the claimed invention, the liquid crystal display of Oh exhibits deteriorated contrast characteristics.

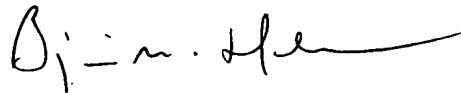
For at least these reasons, it is respectfully submitted that claims 1, 28 and 29 are patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed as well as for the additional features they recite. Applicants respectfully request that the rejections under 35 U.S.C. 102 and 103 be withdrawn.

III. Conclusion

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



James A. Oliff
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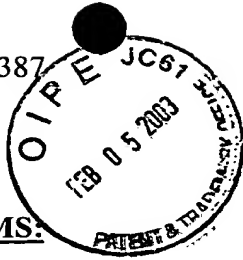
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Date: February 5, 2003

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APPENDIXIN THE CLAIMS:

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Claims 1, 16, 28 and 29 have been amended as follows:

1. (Twice Amended) A liquid crystal device comprising:
a first substrate formed with a plurality of pixels, each pixel having a pixel electrode formed thereon;
a second substrate opposing the first substrate; and
liquid crystal sandwiched between the first substrate and the second substrate,
the liquid crystal having an alignment state that produces a clear viewing direction through the liquid crystal.

the first substrate and the second substrate transmitting, of light incident from one of the substrates, light incident from a the clear viewing direction in a larger amount than light incident from opposite of the clear viewing direction.

16. (Twice Amended) The liquid crystal device according to claim 15, further comprising a non-lens area that allows light perpendicularly incident on the one substrate to travel in a straight line toward the liquid crystal formed on a center of the pixel ~~in the~~ microlens.

28. (Amended) A liquid crystal device comprising:
a first substrate formed with a plurality of pixels;
a second substrate opposing the first substrate; and
liquid crystal sandwiched between the first substrate and the second substrate,
the liquid crystal having an alignment state that produces a clear viewing direction through the liquid crystal.

wherein the first substrate and the second substrate are formed with a first opening area and a second opening area for each pixel, and

wherein, of the first opening area and the second opening area, a center position of the opening area formed in one of the first substrate and the second substrate is offset toward the clear viewing direction with respect to a center position of the opening area formed in another substrate from which light is transmitted.

29. (Amended) A liquid crystal device comprising:

a first substrate formed with a plurality of pixels;

a second substrate opposing the first substrate; and

liquid crystal sandwiched between the first substrate and the second substrate,
the liquid crystal having an alignment state that produces a clear viewing direction through the liquid crystal.

wherein the first substrate and the second substrate are formed with a first opening area and a second opening area for each pixel, and

wherein, one of the first substrate and the second substrate irradiated with incident light is formed with a microlens so as to oppose each pixel, and

the microlens refract incident light from a the clear viewing direction toward the opening area, and a part of the incident light from opposite of the clear viewing direction toward the unopened area.